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wherein each of the plurality of image output units outputs an image based on the image data processed by the host computer.

REMARKS

This application has been reviewed in light of the Office Action dated July 24, 2002. Claims 1-4 and 6-15 are presented for examination. Claims 1, 7, and 11-15, the independent claims, have been amended to define more clearly what Applicant regards as his invention. Favorable reconsideration is requested.

The title has been amended to make it more descriptive, as required in the Office Action. The title has been amended to read as follows:

--PRINTING SYSTEM, PRINTING CONTROL METHOD AND APPARATUS PRINTING DATA IN ACCORDANCE WITH UPDATED CONDITION INFORMATION--.

Claims 1, 3, 4, 6, 12, and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,572,632 (*Laumeyer et al.*), in view of U.S. Patent No. 5,872,895 (*Zandee et al.*). Claims 7-11, 13, and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,923,834 (*Thieret et al.*) in view of *Laumeyer et al.* Claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Zandee et al.* as applied to Claim 1, and further in view of *Thieret et al.*

As shown above, Applicant has amended independent Claims 1, 7, and 11-15 in terms that more clearly define the present invention. Applicant submits that these amended

independent claims, together with the remaining claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

The aspect of the present invention set forth in Claim 1 is an image processing apparatus. The apparatus includes a communicator for performing two-way communications with an image output unit that includes an update unit for updating condition information indicating a condition of the image output unit and a memory for storing the condition information. The condition information is obtained by forming color patches and measuring colors on the color patches. The apparatus further includes an input unit for inputting an image output instruction, an acquisition unit for acquiring the condition information stored in the image output unit by utilizing the two-way communications, in response to the image output instruction, and an image processor for performing image processing of image data in accordance with the condition information acquired by the acquisition unit. The image processor decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via a communication line.

One important feature of Claim 1 is that an image processor for performing image processing of image data in accordance with the condition information acquired by the acquisition unit decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via the communication line. By virtue of this feature, the apparatus can perform image data processing before reducing the image data, and can also reduce the amount of image data that is transmitted by decreasing bit length after processing the image data.

The applied art, alone or in combination, is not seen to disclose or suggest the invention as defined by independent Claim 1, particularly with respect to an image processor for performing image processing of image data in accordance with the condition information acquired by the acquisition unit decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via the communication line.

Laumeyer et al., as understood by Applicant, relates to a printing system which permits choosing any of a number of multiple output devices, such as color printers, of a kind for a printing job in which an output image is to be printed on selected medium. The *Laumeyer et al.* system permits selecting alternative medium for such a printing job, and that all such selections are made without requiring further processing of pixel data or image input data by the system raster image processor. Apparently, *Laumeyer et al.* teaches conversion of color space using a profile generated by measuring the color of a patch and transmission of data stored in the frame buffer 16 to the printer 19 (See column 10, lines 4-11, and 64). However, nothing has been found in *Laumeyer et al.* that teaches or suggests the features of the claimed invention, and in particular an image processor for performing image processing of image data in accordance with the condition information acquired by the acquisition unit decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via the communication line.

For at least the above reason, independent Claim 1 is believed clearly patentable over *Laumeyer et al.* *Zandee et al.* is cited in the Office Action as remedying the

deficiencies of *Laumeyer et al.* *Zandee et al.* relates to a method for object based color matching when printing color documents. Apparently, *Zandee et al.* teaches communication of color information between a device and a computer. The Office Action states that *Zandee et al.* teaches a two-way communicator and an acquisition unit. However, nothing has been found in *Zandee et al.* that teaches or suggests the features recited in Claim 1, and in particular, an image processor for performing image processing of image data in accordance with the condition information acquired by the acquisition unit decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via the communication line.

Thieret et al. is not seen to overcome the deficiencies of *Laumeyer et al.* and *Zandee et al.* as references, particularly with respect to an image processor for performing image processing of image data in accordance with the condition information acquired by the acquisition unit decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via the communication line. *Thieret et al.*, as understood by Applicant, relates to a server for monitoring machine data, predicting trends, and providing a corrective response, and to a hierarchical system of providing predetermined degrees of the response on the basis of a single machine, set of machines, or a plurality of sets of machines. Apparently, *Thieret et al.* teaches that a machine server, connected with a color printer, analyzes a trend of the printer and performs a diagnostic process. The machine server determines the remaining amount of toner and a proper setting point of the driving voltage (See column 5, lines 14-26). Nothing has been found in *Thieret et al.* that teaches or suggests an

for performing image processing of image data in accordance with the condition information acquired by the acquisition unit decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via the communication line.

Accordingly, Applicant submits that Claim 1 is patentable over the cited art, and respectfully request withdrawal of the rejection under 35 U.S.C. § 103(a).

Independent Claims 12 and 14 are method and computer-readable storage medium claims respectively corresponding to apparatus Claim 1, and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 1. Additionally, independent Claims 7, 11, 13, and 15 include the similar feature of an image processor for performing image processing of image data in accordance with the condition information acquired by the acquisition unit decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via the communication line, as discussed above in connection with Claim 1. Accordingly, Claims 7, 11, 13, and 15 are believed to be patentable for reasons substantially similar to those discussed above in connection with Claim 1.

The other rejected claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,


Attorney for Applicant

Registration No. 29,296

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200
NY MAIN 306453

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Five Times Amended) An image processing apparatus comprising:
 - a communicator for performing two-way communications with an image output unit that includes an update unit for updating condition information indicating a condition of the image output unit and a memory for storing the condition information, wherein the condition information is obtained by forming color patches and measuring colors on the color patches;
 - an input unit for inputting an image output instruction;
 - an acquisition unit for acquiring the condition information stored in the image output unit by utilizing the two-way communications, in response to the image output instruction; and
 - an image processor for performing image processing of image data in accordance with the condition information acquired by said acquisition unit, [quantizing the processed image data, and outputting the quantized image data to the image output unit using said communicator]

wherein said image processor decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via communication line.
7. (Five Times Amended) An image processing apparatus connected, via

a communication network, with a host computer and a plurality of image output units, each image output unit having a function of updating condition information of the image output unit, the condition information being obtained by forming color patches and measuring colors on the color patches, said apparatus comprising:

an input unit for inputting the condition information updated by the plurality of image output units;

a memory for storing the inputted condition information in association with each of the plurality of image output units;

a transmitter for transmitting the stored condition information to the host computer in accordance with a request for acquiring the condition information issued by the host computer; and

a management unit for managing an image output job of the host computer, wherein the condition information is obtained by forming color patches and measuring colors on the color patches,

wherein the host computer performs image processing of image data in accordance with the condition information transmitted by said transmitter, [and quantizes the processed image data, and]

wherein the host computer decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via communication line, and

wherein each of the plurality of image output units outputs an image based on the image data processed by the host computer.

11. (Five Times Amended) An image processing method for performing image processing in a network system to which an image output apparatus, a server, and a network terminal are connected, said method comprising:

in the image output apparatus:

a condition measurement [function] step, of updating condition information by forming color patches and measuring colors on the color patches; and

a notification [function] step, of notifying the server of the updated condition information,

in the server:

a storage [function] step, of storing the updated condition information notified from the image output apparatus in correspondence with a type of the image output apparatus; and

a management [function] step, of managing an image output job, and

in the network terminal:

an input [function] step, of inputting an image output instruction of a user;

an acquisition [function] step, of acquiring the updated condition information stored in the server in response to the image output instruction; and

an image processing [function] step, of performing image processing using an image processing condition in accordance with the updated condition information, [quantizing the processed image data, and outputting the quantized image data to said image output apparatus] then decreasing bit length for each pixel of the processed image data and

outputting the bit-decreased image data to the image output unit via communication line.

12. (Five Times Amended) An image processing method performed in a server connected, via a communication network, with a host computer and a plurality of image output units, each image output unit having a function of updating condition information indicating a condition of the image output unit, said method comprising:

an input step₁ of inputting an image output instruction;

an acquisition step₁ of acquiring the condition information stored in the image output unit by utilizing two-way communications, in response to the image output instruction; and

an image processing step₁ of performing image processing of image data in accordance with the condition information acquired in said [acquiring] acquisition step, [quantizing the processed image data, and outputting the quantized image data to the image output unit,

wherein the condition information is obtained by forming color patches and measuring colors on the color patches] wherein said image processing step decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via communication line.

13. (Five Times Amended) An image processing method performed in a server connected, via a communication network, with a host computer and a plurality of image output units, each image output unit having a function of updating condition information of the

image output unit, said method comprising:

an input step₁ of inputting the condition information updated by the plurality of image output units;

a storage step₂ of storing the inputted condition information in association with each of the plurality of image output units;

a transmission step₃ of transmitting the stored condition information to the host computer in accordance with a request for acquiring the condition information issued by the host computer; and

a management step₄ of managing an image output job of the host computer,

wherein the condition information is obtained by forming color patches and measuring colors on the color patches,

wherein the host computer performs image processing of image data in accordance with the condition information transmitted in said [transmitting] transmission step, [and quantizes the processed image data, and]

wherein the host computer decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via communication line, and

wherein each of the plurality of image output units outputs an image based on the image data processed by the host computer.

14. (Five Times Amended) A computer-readable storage medium that

stores a program for implementing, by a computer, an image processing method, the program comprising:

code for a communication [function] step, of performing two-way communications with an image output unit having an update unit for updating condition information indicating a condition of the image output unit and a memory for storing the condition information, wherein the condition information is obtained by forming color patches and measuring colors on the color patches;

code for an input [function] step, of inputting an image output instruction;

code for an acquisition [function] step, of acquiring the condition information stored in the image output unit by utilizing the two-way communications, in response to the image output instruction; and

code for an image processing [function] step, of performing image processing of image data in accordance with the condition information acquired by the acquisition step, [function, quantizing the processed image data, and outputting the quantized image data to the image output unit using the communication function]

wherein said image processing function decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via communication line.

15. (Five Times Amended) A computer-readable storage medium that stores a program for an image processing method performed by a server connected, via a

communication network, with a host computer and a plurality of image output units, each image output unit having a function of updating condition information of the image output unit, the program comprising:

code for an input [function] step, of inputting the condition information updated by the plurality of image output units;

code for a storage [function] step, of storing the inputted condition information in association with each of the plurality of image output units;

code for a transmission [function] step, of transmitting the stored condition information to the host computer in accordance with a request for acquiring the condition information issued by the host computer; and

code for a management [function] step, of managing an image output job of the host computer,

wherein the condition information is obtained by forming color patches and measuring colors on the color patches,

wherein the host computer performs image processing of image data in accordance with the condition information transmitted by the transmission step, [function, and quantizes the processed image data, and]

wherein the host computer decreases bit length for each pixel of the processed image data and then outputs the bit-decreased image data to the image output unit via communication line, and

wherein each of the plurality of image output units outputs an image based on the image data processed by the host computer.

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